



PRESENTATIONS

Session I

Reality Stomps on a Field of Dreams

The long debate, over what type of governance is most appropriate for industries supplying basic public utility services, remains unsettled.

There are valuable lessons to be learned, and new insights to be gained, from a parade of recent deregulation experiences.

- **Moderator:**

**Cheryl Walker Davis – Director, Office of Special Assistants
Pennsylvania Public Utility Commission; Chair, NARUC Staff
Subcommittee on Law**

- **Presenter:**

Harry M. Trebing – Professor Emeritus, Michigan State University

Assessing Deregulation: The Clash between Promise and Reality

Harry M. Trebing

There is a general consensus that public utility services such as electricity, natural gas, telecommunications, and water are an integral part of the infrastructure of modern society. These services are typically provided by complex systems of capital-intensive networks that link centralized supply with a wide range of diverse customer classes. Accessibility to these services becomes critical if each sector of society is to realize the maximum potential gain to be derived from the employment of these services to enhance productivity, income growth, and the attainment of societal goals. While there may be agreement on the relationship between public utilities as infrastructure and the gains to society, there is no consensus regarding the appropriate organization and governance of the industries supplying these services. For more than 100 years there has been a sharp dichotomy between those who would have government play a major role through direct intervention and regulation, and those who would leave the development and operation of these industries to private initiative within the context of free market incentives and penalties.

Among the earliest proponents of government regulation were the institutional economists who played a significant role in shaping the content and form of regulation during the Progressive and New Deal eras. Institutionalists participated in developing new regulatory commissions, the methods of control, and the adaptation of the regulatory process to changing industry structures. By the 1940s, the work of the institutionalists had become well accepted as a part of the regulatory framework that had been put in place at the federal and state levels. A central feature of the institutionalist approach continues to be a belief in the need for government intervention to constrain market power and assure full access to utility services for all types of

The author is Professor Emeritus at Michigan State University, East Lansing, USA. An earlier draft of this paper was presented at the Association for Evolutionary Economics annual meeting in Washington, D.C., in January 2003. He benefited considerably from discussions with Maurice Estabrooks, David Gabel, Robert Loube, and Diane Moody in the preparation of this paper.

consumers. Institutionalists perceive regulation to be an evolutionary process that must change in order to be responsive to evolving industry structures, new technologies, and new corporate strategies.¹

The critics of regulation represent a diverse group of academics and others who share a common belief in the supremacy of free markets over any form of regulatory intervention. They draw upon revisionist theories of government and regulatory history to demonstrate the impossibility of public interest regulation. In contrast to the institutionalists, the critics of regulation share a libertarian desire to limit, constrain, or reduce the influence of government.²

Beginning in the late 1960s, a series of major industry-wide problems arose that created conditions that would eventually lead to public demands for a drastic change in regulatory policy. The rapid fly-up in energy prices, the continuing threat of an energy crisis, the growing shortage of natural gas in interstate markets, the massive cost overruns associated with new nuclear plants, and the bitter resistance of AT&T to new entrants employing new technologies that promised improved service at lower prices combined to create pressures for access to a greater range of supply options. Concurrently, there was growing evidence of managerial incompetence in these industries. Regulation was blamed, at least in part, for many of these problems.

Three major pressure groups moved aggressively to take advantage of this situation and actively promote deregulation. These were the large industrial buyers of energy and telecommunications seeking to extract major price concessions from utilities and carriers, a number of new entrants anxious to gain access to markets that were perceived to be potentially lucrative, and a new class of utility managers that envisioned the utility as a cash cow that could be milked to support entry into deregulated markets. For these groups, the largely academic arguments of the critics of regulation provided an ideal conceptual framework for promoting their cause. Free markets would provide (1) increased innovation and efficiency, (2) lower prices, (3) greater consumer choice, (4) rapidly diminished incumbent market power because of new entry, and (5) a superior infrastructure capable of serving all sectors of society.

The late 1970s and 1980s saw the relaxation or abandonment by state and federal regulators of many of the practices closely associated with the institutionalists' approach to regulation. Transitional price caps replaced rate-base/rate-of-return regulation, merger policies became increasingly permissive, and regulatory agencies sought guidelines that would aggressively promote competition. It was assumed that passage of the Energy Policy Act of 1992 and the Telecommunications Act of 1996 would open the doors to an even greater range of free market opportunities. By 1999, more than a dozen states sought to promote retail competition in electricity to complement efforts by the Federal Energy Regulatory Commission (FERC) to promote wholesale competition in generation. The Federal Communications Commission (FCC) essentially deregulated the large long distance interexchange carriers (IXCs) while endeavoring to promote entry into local exchange markets by requiring the resale of services or the leasing of local plant facilities to competitive local exchange carriers (CLECs).

By the 1990s it began to appear that free market proponents were achieving a significant measure of success. New energy trading markets for electricity and gas appeared for the first time, and trading volumes grew at an exponential rate. New entrants began building deregulated generating plants based on combined cycle gas turbine technology. Market structure turbulence also appeared as utilities sought to move into new service territories or to cross industry borders. The most remarkable example of the latter was the Montana Power Company, which sold its entire electricity complex and reinvested the proceeds in Touch America—a telecom entity.³ In telecommunications, there apparently were 300 new CLECs anxious to challenge incumbent local exchange carriers (ILECs), and there were claims that intermodal rivalry between wireline, cable, and wireless technology would soon wipe away traditional centers of market power. In each of these cases, the financial markets stood ready and willing to provide funds to new entrants and incumbents alike.

Traumatic Collapse

Beginning in 2000, an unsuspecting public was shocked to learn that a massive, unprecedented wave of corporate failures and bankruptcies had occurred in the public utility industries. The bankruptcies of WorldCom (2002) and Enron (2001) constituted the first and second largest bankruptcies in U.S. history. This news was accompanied by widespread exposés of fraudulent corporate behavior, dramatic falls in stock values, debt payment defaults, downgraded credit ratings, and large corporate layoffs. The magnitude of this collapse was overwhelming. *The Wall Street Journal* estimated that the market value of the entire telecom sector had fallen by almost \$2 trillion and that more than 500,000 telecom workers had lost their jobs (R. Blumenstein and S. Thurm, "Telecom Sector's Bust Reverberated Loudly across the Economy," *Wall Street Journal*, July 25, 2001). Standard & Poor's estimated that seventy-four telecoms defaulted on \$112.6 billion in debt between 1999 and 2003. Questions were also raised about the \$306 billion in debt for telcos and cable, 21 percent of which would mature by 2005 (S. Young, "Telecom-Sector Debt May Claim More Victims," *Wall Street Journal*, April 21, 2003, C-1). Finally, the stock values of the twenty-eight largest CLECs dropped by 94 percent, and many of these CLECs were in bankruptcy or reorganization. The electric and gas companies most heavily involved in deregulated markets suffered an approximate 90 percent decline in stock values between 2000 and 2002. By 2003, the credit ratings of 16 percent of the firms in this industry had been reduced to junk status (R. Smith, "Utility Sector's Credit Quality Deteriorates as Borrowing Jumps," *Wall Street Journal*, July 31, 2003, A-13). Even El Paso, the world's largest natural gas company, found that fraudulent behavior had driven its stock price from \$75 to \$7 per share. Nor was California, which had pioneered in electricity deregulation in 1986, spared the consequences of extreme price volatility and a massive debt burden incurred in the hope of securing price stability and an assured power supply. In 1999–2000, the spot price for

electricity in California increased from \$30 MWh to more than \$1000 MWh. The state entered into a ten-year contract to buy power at \$69 MWh to protect its retail customers. But this price subsequently fell to \$30 MWh, and the state has had only modest success in renegotiating these contracts even though there is considerable evidence of price manipulation by traders.

The public utility industries had traditionally been perceived as the bedrock of conservative investment—but now many of these firms were publicly disgraced. What made matters worse was the fact that traditional free market safeguards and constraints proved to be largely ineffectual. The auditing review of corporate books and records,⁴ the oversight of executive behavior by boards of directors, and the ability of financial markets to detect fraud *ex ante* failed to provide the requisite degree of protection. Simply put, executives wanted to keep stock values high by creating the illusion of growth even if this meant breaching ethical boundaries and falsifying documents and reports. Edythe Miller has asked, “Where were those protectors that had been relied upon to forestall such activity? Out to lunch, it would seem.” Continuing, she noted that “economic regulators appear to believe that their real job was deregulating . . . [or they were] starved for funds and resources” (Miller 2003).

Congress reacted to the crisis with passage of the Sarbanes-Oxley Act of 2002, creating the Federal Accounting Oversight Board. But would tighter reporting standards and greater transparency be sufficient to constrain such abuses in the future?

While better reporting and greater transparency are clearly called for, these steps alone will not be sufficient to prevent a renewed abuse of discretionary power similar to that which followed the initial wave of deregulation. At least three points suggest that even stronger measures are required. First, the essential facilities argument (primarily involving facilities required for access to the network) must not be ignored as peripheral or of minimal significance. Monopoly focal points do exist in public utility industries, and they cannot be dismissed by simply defining the total market so broadly as to reduce their overall significance in the structure of the industry. The California experience indicates that the tie-in between trading and networks will always be conducive to the promotion of scarcity and price manipulation. Second, infrastructure industries by definition involve high overhead costs and substantial sunk costs. These cost characteristics will serve to foreclose competitive entry by most facility-based rivals. Entry would have to be achieved either by paying the incumbent firm for access or by engaging in mergers and acquisitions. The former course will create an entrant that is totally dependent on the incumbent as the deregulation process continues. The latter will create greater concentration. Neither option is sufficient to foreclose the need for continued regulatory oversight. Third, reliance on the serial monopoly concept (Evans and Schmalensee 2001) or similar arguments to dismiss regulatory intervention is little more than an apologetic for taking no action in the belief that the status quo must inevitably give way to new technology and new entry. Of course, it can be argued that antitrust agencies will exercise oversight, but this ignores the fact that more and more information necessary to

monitor corporate behavior will be classified as proprietary in the absence of a regulatory prescription that sets forth a mandatory reporting requirement.

This paper will first examine the consequences of deregulation in telecommunications and energy, together with salient features of the new industry structures that are emerging. Second, four dimensions of market failure will be set forth as a basis for evaluating current public policies. Finally, a program for regulatory reform will be proposed that hopefully follows in the institutionalist tradition.

Telecommunications in a Deregulated Environment

There are five significant consequences of telecom deregulation. The first is the realignment of market structures and the emergence of the Regional Bell Holding Companies (RBHCs) as centers of power. Following AT&T divestiture in 1984, seven RBHCs were created to serve local exchange markets. Subsequent mergers and acquisitions reduced this number to four. Each of these has been able to retain a dominant share of the local exchange market (approximately 95 percent) while moving aggressively to directly challenge the IXC, cellular, and cable companies in long distance, data, broadband, and wireless markets.

The market power of the RBHCs is reflected in the high rates of return that are currently being earned and the ability of these carriers to maintain prices significantly above costs for both regulated and deregulated services. The following table shows the total return for 2001 for selected affiliates of the parent RBHCs. These returns are consistently higher than would have been allowed under traditional regulation.

Data on price-cost relationships for both regulated and nonregulated services are fragmentary. However, there is evidence that regulated prices for selected services can be maintained at levels that are significantly higher than relevant costs and that deregulated prices for specific services can be higher than regulated prices for the same service. As an example of the former, the staff of the New Hampshire Public Utilities Commission has shown that Verizon's price for T-1 high capacity circuits has been marked up 100 percent above recurring charges and 80 percent above nonrecurring charges (NH PUC 2003). Such markups will be perpetuated barring direct regulatory intervention.

Table 1. Carrier Returns 2001

Carrier	Total Co. Return	Carrier	Total Co. Return
SBC Kansas	19.7 percent	Verizon WVA	21.8 percent
BellSouth MS	29.4 percent	BellSouth AL	20.9 percent
SBC Arkansas	15.6 percent	Ameritech MI	41.4 percent
Ameritech IL	22.8 percent	BellSouth NC	15.8 percent
BellSouth TN	18.5 percent		

Source: Loube 2003, 436, table 3.

An example of the divergence between deregulated and regulated prices is provided by the Phoenix Center study of special access prices for high capacity circuits (Ford 2003). This study shows that deregulated special access prices are 13–14 percent higher than regulated special access prices across the nation. In addition, deregulated special access prices are 3.3 times greater than incremental costs while regulated special access prices are only 2.9 times greater than incremental costs. This demonstrates the market power available to RBHCs in selected deregulated markets.

A key feature of RBHC dominance has been the ability to fend off potential rivals, whether IXC, CLECs, or wireless carriers. AT&T attempted to bypass RBHCs and other ILECs by investing more than \$100 billion to purchase cable systems to reach the final customer. But this effort failed and on November 14, 2002, AT&T was compelled to sell its cable properties to Comcast for \$72 billion (Y. J. Dreazen, "FCC Gives Green Light to AT&T-Comcast Deal," *Wall Street Journal*, November 14, 2002). In part this was necessitated by the heavy debt burden associated with acquiring the cable systems. The other IXCs were no more successful in getting unlimited access to the final customer.

CLECs were supposed to constitute a major competitive threat to the RBHCs after the FCC gave them the right to purchase ILEC services at a discount for resale or to lease ILEC capacity and to become a facility-based competitor. The purchase of ILEC services for resale has declined, but the leasing of capacity continues to grow. Nevertheless, David Gabel noted that "[a]t the end of 2001 . . . CLECs . . . served only 8.5 percent of the local loops and only 2 percent of the residential market for local telecommunications services" (Gabel 2002, 652). The FCC combines both CLECs and IXCs in evaluating the threat of competitive entry. This group appears to be targeting large business customers rather than the mass market, but even so the total number of access lines held by the CLEC/IXC combination equates to only 6.9 percent of the total RBHC access lines (FCC 2003 ¶41). Furthermore, the FCC reported that capital spending by this group fell from \$21 billion in 2000 to \$10.7 billion in 2002 (FCC 2003 ¶37). Clearly, the future of CLEC entry depends on the ability to lease loops, switches, and transport at favorable terms from incumbent carriers.

At the outset, the threat to RBHCs from wireless technology appeared to be significant. Teligent had planned to use fixed radio relay capacity to bypass the local telephone systems. But Teligent went bankrupt along with many of the other CLECs. Cellular wireless appears to have a more complementary than substitute relationship to the wireline network. The FCC estimates that only 3–5 percent of all wireless customers use their wireless phones as their only phone (FCC 2003 ¶52–54). Gabel believes this could be attributable to the fact that "at this point in time, the quality of service on the wireless network is so inferior to wireline service that the competitive impact of wireless service is limited" (Gabel 2002, fn. 2). It should also be noted that the RBHCs provide wireless service through their affiliates. Only the duopoly rivalry between cable and the RBHCs'

digital subscriber line service (DSL) for the broadband market remains an area where there is a confrontation between equals.⁵

A review of Canadian telecommunications by the Canadian Radio-Television and Telecommunications Commission (CRTC 2002) reinforces the conclusions about the dominance of incumbent carriers and provides a perceptive insight into the possible future of the industry. The major provincial carriers (such as Bell Canada, Telus, Manitoba, and Saskatchewan) are classified as incumbents while AT&T Canada and CallNet-Sprint Canada are classified as competitors. The incumbents dominate the entire wireline market and, more importantly, they demonstrate a faster rate of revenue growth in the most significant wireline submarkets. These include large business long distance service, wholesale long distance, data and private line service, toll free service, and international service. In each case the rate of revenue growth for the competitors is either lower or declining. In the Canadian mobile (wireless) market a tight oligopoly exists with Bell Canada, Telus, and Rogers holding equal shares of the market. In Internet access, the same duopoly exists as in the United States, with rivalry between the incumbents and cable companies. Finally, the scope of Bell Canada's holdings is particularly informative. In addition to local and long distance wireline service, wireless service, and terminal equipment, Bell Canada (BCE Inc.) provides direct broadcast satellite service, business-to-business e-commerce, global communications, and commercial television while also having a major investment in the *Globe and Mail* newspaper.

Second, telecommunications deregulation has raised a fundamental question about the future of pure or basic research in this field. Many of the discoveries that gave rise to the telecom revolution came out of the Bell Laboratories when it was an integral part of the AT&T-Western Electric complex. Examples include Bell Labs' pioneering work on the transistor, lasers, communications satellites, optical communications, cellular phone technology, touch-tone signaling, digital signal processors, and a number of projects that culminated in the creation of the direct distance dialing network. Moreover, the Bell Labs received six Nobel Prizes for its work. After AT&T divestiture, Bell Labs became a part of Lucent Technologies, which was the legatee of Western Electric. In the wake of the collapse of the telecom market and its devastating impact on equipment suppliers, Lucent imposed a \$2.1 billion cost-saving and reorganization program in 2002. This shrank the Bell Labs pure research staff to just over a third of its 1996 level. Its annual budget fell from \$350 million to \$115 million over the same period. Lucent also narrowed the Labs' focus to projects that would have direct applicability to the company's telecom products (D. K. Berman, "At Bell Labs, Hard Times Take Toll on Pure Science," *Wall Street Journal*, May 23, 2003, A-1). Between 1994 and 2002, the Electric Power Research Institute suffered a similar fate when its budget was cut by 50 percent and it was compelled to turn to projects with a quick payback. EPRI had served as the research arm for the electric utility industry.

The decline in pure research for the utility industries presents a major challenge. Everyone will agree that venture capital will innovate at a faster rate than a regulated

monopoly, but deregulation alone is not the answer. The centralized collection of funds by government or a nonprofit agency may be a starting point, but the actual process of implementation remains the principal obstacle. Bell Labs and EPRI may have had their shortcomings, but they were not nearly as bad as the attempts of the U.S. Department of Energy to translate a one-mill-per-kilowatt-hour surcharge imposed on electricity sales into a solution for the disposal of nuclear waste. Twenty billion dollars later, spent nuclear fuel still remains at 131 temporary sites in 39 states awaiting a final answer.

Third, telecom deregulation appears to have produced a variety of unintended consequences, the most recent of which is the ability of interconnected carriers to shift costs back and forth to avoid the full cost of service. This cost shifting could eventually result in assessments against retail customers who are not causally responsible for the costs assigned to them. Verizon Communications and SBC Communications (two of the largest RBHCs) charged that MCI cheated them out of fees through a call-routing scheme that disguised expensive long distance calls as cheaper local calls. MCI denied these allegations, saying that its call-handling practices were legal and aboveboard. Concurrently, AT&T filed a racketeering law suit against MCI accusing the company of cheating AT&T through an elaborate call-routing scheme that involved moving calls through Canada. AT&T charged MCI and Onvoy (a small Minnesota retail carrier) with a strategy that imposed call-handling charges on AT&T that should have been paid by MCI. MCI then produced the results of its own investigation, charging that AT&T was guilty of disguising the origin of certain phone calls initiated in Alaska and then routed through Atlanta, Georgia, and sent back to Alaska where they were terminated as interstate calls (A. Latour, D. K. Berman and S. Young, "MCI Questions Rivals' Call Practices," *Wall Street Journal*, September 3, 2003; and Latour, Berman, and Dreasen, "How Rivals' Long Campaign against MCI Gained Traction," *Wall Street Journal*, August 1, 2003, A-1). The fee for terminating interstate calls from Georgia to Alaska is lower than the fee for terminating intrastate calls in Alaska. Apparently, interconnected networks will produce a virtually unlimited number of opportunities to game the routing process and shift costs between different parties. It is obvious that deregulated markets, court filings, and legal settlements will be inefficient and will do very little to forestall even more inventive routing proposals. What is needed is direct regulatory intervention to establish standards whereby new technology, such as Signal Switching Seven, can be used to track all messages and assign them to the appropriate parties.

Fourth, the number of complaints regarding deterioration in the quality of service has increased as a result of telecom deregulation. These complaints can be divided into two categories: (1) wholesale service (primarily sales by ILECs to CLECs) and (2) retail sales (primarily mass market sales to residential and small business customers).

With respect to wholesale service, the FCC imposed performance standards on SBC when it approved the RBHC's 1999 merger with Ameritech. The Commission also imposed performance standards on Verizon when it acquired GTE in 2000. These performance standards were designed to assure adequate service when the RBHCs pro-

vided leased facilities to the CLECs. The two RBHCs did not live up to these standards and both paid modest penalty charges to the Commission, but the provision of poor service remains an obvious weapon for handicapping potential competitors (Mark Wigfield, "SBC, Verizon Pay Penalties on Wholesale Service," *Wall Street Journal*, October 26, 2001).

Poor service for retail customers appears to be persistent in both the wireline and wireless services and for both long distance and local service. Much of the discussion of poor performance is essentially anecdotal, such as the *Wall Street Journal* article "The Worst Phone Service in America" (J. Spencer, October 3, 2002, D-1). The WSJ evaluated both long distance and cellular carriers, and MCI long distance and Sprint PCS had the distinction of being rated "worst." Robert Nelson's "Quality of Service and Open Access—A Complex Interrelationship" is one of the best analyses of the deterioration of telecom service at the state level (Nelson 2001). Nelson examined Michigan's experience after the Telecom Act of 1996 by measuring capital expenditures per switched line, the percentage of dissatisfied customers, and local service repair repeats. After evaluating comparative RBHC data, Nelson recommended regulation-imposed penalties for poor performance.

The incentive to denigrate service was minimal under traditional rate base/rate-of-return regulation, but with deregulation the incentive to cut service and increase profits is much stronger. Furthermore, this incentive will be greatest in markets where consumer choice is minimal and price competition is absent. What is necessary is regulatory intervention to impose performance standards that trigger penalties when these standards are not achieved.

Fifth, there is little evidence that deregulation has put an optimal telecom infrastructure in place. In the initial phases of deregulation, the interaction of highly flawed demand forecasts by management, the extreme willingness of financial markets to finance anything associated with telecommunications and the Internet, and oligopolistic rivalry among IXCs in long-haul transport created a massive overexpansion in fiber optics. The *New York Times* reported that more than 100 million miles of optical fiber had been laid around the world from 1999 to 2001 and that "only 5 percent of the fiber in the ground is on" (S. Romero, "Shining Future of Fiber Optics Loses Glimmer," *The New York Times*, June 18, 2001). At the same time, the global demand for broadband telecommunications was perceived to be almost unlimited. To serve this market, two joint ventures were created and financial markets responded enthusiastically. AT&T and British Telecom formed "Concert," and France Telecom, German Telekom, and Sprint formed "Global One." When the telecom bubble burst, these joint ventures quickly fell apart and other high flyers in domestic and international telecommunications, such as Global Crossing, Williams, and PSINet, faced bankruptcy and reorganization. While substantial excess capacity existed in optical fiber for transport, RBHC dominance in the wireline markets constrained investment in local loops and tradi-

tional local networks. In wireless, oligopoly rivalry promoted rapid expansion and potential excess capacity in both the United States and overseas markets.

For the foreseeable future, the infrastructure put in place by deregulation will be a product of RBHC dominance in the wireline markets, tight oligopoly in the long distance and wireless markets, and limited potential entry by CLECs into local markets. This process will be negatively impacted by the disenchantment with telecom investment that currently pervades financial markets.

Electricity and Natural Gas in a Deregulated Environment

There appear to be six significant consequences of energy deregulation. The first was the skyrocketing increase and subsequent collapse of merger activity. In 1994, there was one completed merger with a value of \$8.1 billion; in 2000, there were sixteen completed mergers with a total value of \$260.9 billion; in 2002, there were only three mergers with a total value of \$25 billion; and in 2003 there was one merger at \$12.2 billion.⁶ This roller coaster was initiated when utility management sought to move from a vertically integrated localized monopoly to a diversified holding company serving both traditional basic service markets and new deregulated markets on a regional, national, or international basis. The merger wave collapsed for two reasons. First, the Enron trading scandal devastated stock prices and credit ratings of those utilities and their affiliates most heavily involved in deregulated trading, brokering, and marketing. Xcel's NRG, Aquila, AES, Reliant, PG&E's National Energy Group, and Mirant vividly demonstrated the breadth and magnitude of this collapse. Second, there was a rapid expansion in generating capacity and this greatly diminished the gains to be made by purchasing the generating assets of other utilities. This expansion also dealt a major blow to independent merchant generators such as Calpine, whose stock value collapsed by more than 90 percent in one year. This rash of failures led to the forced sale of assets which, in turn, opened the door to outside buyers such as Berkshire Hathaway. These firms were dubbed "vultures."

Second, by 2003 it was evident that the electric and natural gas industries had divided themselves into two categories. The first would become the so-called "strong, asset-based utilities" that include Southern Company, Dominion Resources, Florida Power & Light, Mid-American, Exelon, and Entergy. The second category would include firms at or near bankruptcy and reorganization because of over-expansion and diversification. The former endorsed a "back-to-basics" philosophy in which they would retain de facto vertical integration through ownership of the regulated distribution system while purchasing the bulk of their energy requirement from a deregulated affiliate or from a vertically integrated affiliate. As an example, the Southern Company purchases 80 percent of its power supply from the Southern Power Company, which is its unregulated generator (R. Smith, "Power Relations: How Southern Co. Flourishes in Humbled Electricity Industry," *Wall Street Journal*, June 27, 2003, A-1). The parent hold-

ing company schedules planned generation with its own transmission network in advance—an option not available to independent generators. This type of operation appears to be greatly favored by the financial markets because it combines a quasi-monopoly position in generation, greater financial stability, and market control at the retail level.

Third, deregulation has produced violent fluctuations in generating capacity together with the prospect of inadequate reserve margins during periods of peak demand. For example, reserve margins in the Mid-Continent region are forecast to fall to 3.3 percent in 2005, while in other regions they are forecast to reach 45–56 percent by 2006. Traditional reserve margins were 15 percent for electricity generation. Deregulated generators have no profit incentive to maintain committed reserve margins. Rather, they have a strong incentive to charge high prices during periods of short supply. If high reserve margins do exist under deregulation, this will be a function of poor forecasting and excess generating capacity, but there will be an inherent bias to constrain new construction to avoid this outcome.⁷

In 2000, the New England grid manager attempted to address the problem of sufficient generating capacity by requiring the local utilities to have adequate reserve capacity for the peak by going to an auctioning process to get reserves. However, the merchant generators demanded such high prices for providing these reserves that the market solution was dropped in favor of a mandated reserve. Each Regional Transmission Organization (RTO) or grid manager would now mandate a reserve margin for the utilities in its service territory. The belief is that a high reserve margin will force local utilities to plan more effectively and will also create an incentive to build generation. This approach might be construed as a replacement for vertical integration. However, this places the local utility in a dilemma when the goal of retail deregulation is to give consumers the option of choosing an alternative supplier while at the same time requiring the utility to provide default backup service if that supplier fails. Under these conditions planning becomes extremely difficult, uncertainty and the cost of holding reserve capacity will escalate sharply, and the residential/small business customer will be asked to bear a new surcharge.

Fourth, transmission reliability remains a problem as shown by the blackout of 2003. The problem is that the grid was not designed to serve as a facility for power trading, marketing, and brokering between diverse players. Rather, it was designed to incorporate generation with load centers in a least-cost fashion. FERC seeks to promote wholesale competition by separating generation from transmission and distribution. Ownership of the transmission function will remain with the parent utility, but an independent manager (organized as an RTO) will be charged with the responsibility of assuring open access to transmission for all existing and potential generators and traders. For the utility, this creates an inherent bias not to expand the grid. A failure to expand will foreclose competitive entry and also permit the utility to earn congestion profits on its investment. It has been suggested that the proper signal for determining when to expand transmission will be given by the ability to hedge transmission rights. It is argued

that as long as a hedging market can function properly there is no need to expand the transmission network. The fallacy of this argument is that it assumes the supply of transmission is highly elastic (comparable to hedging in a commodities market), but this is an unrealistic assumption. The shortcomings of hedging as a test, as well as the resistance of the PJM RTO to expand transmission capacity for a coalition of municipal and cooperative utilities on the Delmarva Peninsula, demonstrate this point.⁸ It should also be noted that available transmission capacity for potential entrants can be constrained by simply increasing the transmission capacity set aside to ensure reliability for the native load or existing customers of the local utility. If total transmission capacity remains constant while the reserve margins for native load customers are increased, this will reduce available capacity for competitive entrants.

Fifth, the growth in size of utilities with deregulation has greatly facilitated the ability to restrict supply and raise price. This is best demonstrated by the behavior of El Paso, which has become the world's largest broadly based natural gas company. It owns the nation's largest complex of pipelines; it was the third largest producer of natural gas in 2000; and two-thirds of its revenues came from nonregulated sources. California charged that it withheld transmission capacity, thereby driving prices in the California market to \$23 per Mcf versus \$7 per Mcf across the U.S. market. El Paso reached a settlement with California in 2003 whereby El Paso would pay \$1.1 billion in compensation over twenty years.⁹ The emergence of strong asset-based utilities, as previously described, will assure that this type of problem will persist.

Sixth, deregulation did not produce lower electricity prices. The average price of inflation-adjusted electricity was lower in 2002 than in 1982, but as Diane Moody concluded after a careful analysis, "the best credible, available data on electricity prices do not support a hypothesis that deregulation has brought lower prices. The relatively steady decline, on average, in the inflation-adjusted price of end-use electricity over the past 20 years can be largely explained by traditional factors such as declines in regulated rate base and fuel costs, legislative rate freezes, and other predictable determinants" (Moody 2003).

Furthermore, deregulation has not created major breakthroughs in new technology nor has it led to a major expansion in renewable energy supply. The combined cycle gas turbine, which is widely used by merchant generators, was created during the period of monopolistic regulation. Similarly deregulated markets have done very little to promote green power unless mandated to do so by law. This explains why fourteen states have required utilities to provide varying quotas of green power for consumers. Further, it should be noted that the municipal power system in Jacksonville, Florida, has been on the forefront of developing green power from renewable sources—surpassing the competitive suppliers (J. J. Fialka, "Florida Utility Finds It's Not Easy Even Trying to be Green," *Wall Street Journal*, April 4, 2002).

Dimensions of Market Failure under Deregulation

The first area of failure is the persistence of centers of economic and political power as conditions change over time. These centers have discretionary power to determine price, output, investment, and profit levels. They are seldom erased by competition but simply realign themselves among players. The successful establishment and maintenance of centers of power involves three crucial factors: (1) balancing sales between basic or core markets and diversified markets, (2) capturing all inherent public utility network and coordination economies, and (3) creating pricing strategies that exploit differentiated markets while either foreclosing entry or creating barriers to profitable growth for rivals when barriers to entry do not appear to be substantial. Integrating these factors will assure market dominance. Network economies arise from the ability to exploit economies of scale, scope, and joint production, together with the ability to pool reserves and obtain least-cost routing alternatives. As network size increases, the cost of adding new services typically decreases. These supply system costs are characterized by high overhead/common costs, low directly assignable costs, low short-run marginal costs, and low short-run variable costs. Coordination economies involve the ability to match diverse demand and usage patterns with a capital-intensive supply system. Success in this will result in high load factors, high diversity factors, and high capacity factors that translate into low fixed unit costs. Both network and coordination economies require a minimum firm size and a minimum market share.

These three factors combine to create a strong set of incentives to expand firm size and market coverage, engage in price discrimination and cross subsidization, promote mergers and acquisitions, form new holding companies, constrain oligopsony power, and prevent loss of market share. Political pressures include a host of lobbying strategies and attempts to subvert regulatory intervention.

High overhead costs will create a special set of problems for management seeking to optimize long-term capital planning. As Eugene Coyle and Lester Telser have argued, demand volatility and demand fluctuations will adversely affect long-term capital planning (Coyle 2002). If such capital planning is unsuccessful, excess capacity, price instability, and denigration of reliability will result. This will increase uncertainty and raise the cost of capital. Management will have a strong incentive to adopt consistent capital management strategies within the firm and between different firms. Consistency will lead to cooperation and ultimately to collusive behavior.

Actual deregulation experience demonstrates vividly how the failure to achieve these factors can result in financial collapse, bankruptcy, or excursions into fraudulent behavior. For example, neither AT&T nor WorldCom was able to achieve the system-wide integration of network and coordination economies with least-cost vertical access to retail markets despite their multiple acquisitions. Similarly, independent generators such as Calpine and Mirant were unable to capture these economies as part of their program of establishing deregulated merchant generators. Their goal was to have independent generation achieve an optimal balance of long-term power contracts

together with service to potentially profitable spot markets. This did not come to pass, and Calpine, as noted earlier, has suffered a substantial fall in the price of its stock and Mirant has declared bankruptcy (J. Friedland, "Lacking Deal with Creditors, Mirant Files for Chapter 11," *Wall Street Journal*, July 15, 2003). An example of the inability to successfully balance markets is provided by PG&E Corporation. PG&E, the utility, declared bankruptcy in 2001 but currently seems to be benefiting from an oversupply of low cost power; on the other hand, the deregulated affiliate (National Energy Group) declared bankruptcy in 2003 when the same oversupply of power depressed prices and made it impossible to cover its debt obligations (R. Smith, "PG&E Seeks Cost Protection for Its Wholesale Energy Unit," *Wall Street Journal*, July 9, 2003). Finally, new entrants often do not achieve the market share required to be viable. As Gabel noted, high fixed costs and low market share place the CLEC entrant at a consistent disadvantage. A CLEC challenging an ILEC with a 20 percent market share will have monthly costs four times greater than those of the incumbent (Gabel 2002, 656).

The creation of sustainable centers of power should not be confused with the provision of least-cost service to all segments of society. Discretionary power will divert performance gains to the advantage of the firm and in so doing will distort use of the networks that are typically characterized by increasing returns to scale. These distortions, in turn, can induce the suboptimal employment of resources. K. E. Harris provided an example by noting that local electric utilities will tend to build smaller generating plants closer to points of consumption because of diminished confidence in the transmission grid (Harris 2002).

The second area of market failure relates to the vulnerability of deregulated trading to manipulation and subversion. Abuses can occur because of an imbalance in bargaining power and information between buyers and sellers during periods of scarcity. Abuses can also occur because of the dependence of trading on an underlying network complex. During the western energy crisis, scarcity promoted trading abuses in the form of roundtrip trades (trading the same energy back and forth to inflate revenues), ricochet trades (exporting and importing the same energy to raise price), and death star strategies (accepting payment for threatening to ship power during periods of network congestion). In a broader context, the trading-network interrelationship can be manipulated by denying rivals access to the network, giving preferential network access to the trading affiliates of incumbent utilities, and the collusive dividing up of geographic markets. There are numerous examples of these abuses, such as Williams' payment of a penalty for giving its trading affiliate preferential treatment on its pipeline,¹⁰ and Sierra Pacific's charge that natural gas pipelines divided up the southwestern U.S. market to exclude competitors.¹¹

Trading markets will also be adversely affected by the actions of dominant players with deep pockets. For example, BC Hydro apparently played a major role through its marketing subsidiary, Powerex, during the western energy crisis when that affiliate alone accounted for 40 percent of the ricochet trades that took place (Leone 2003a). In the

future, it is not difficult to envision a large, deregulated marketer, affiliated with a major utility system, holding large blocks of gas or generation capacity as well as transportation capacity across different pipelines and grids, and using these holdings to achieve market dominance in retail sales. Small traders are typically limited to transactions of 30 days or less and are simply incapable of making commitments at this level.

The trading process can also be rigged by submitting false information to publications that compile industry price indices. These indices are used in forward contracting and a misrepresentation of a few cents can translate into millions of dollars in profits. The Commodities Futures Trading Commission negotiated a settlement with Dynegy regarding the submission of false data (CFTC 2002), and the CFTC is currently investigating nineteen marketers who are suspected of reporting bogus natural gas prices to industry publications in order to distort prices in trading markets.

Finally, there remains a question whether trading markets will send the proper signal when it is necessary to expand the network. The assumption is that the price of transmission rights incorporated into a hedging market will indicate the need for expansion. As noted earlier, there is evidence that this approach does not work and that the payment of high congestion prices will not lead to an expansion of transmission capacity. The New York ISO reported that congestion pricing costs New York ratepayers over \$1 billion per year but that nothing in the way of new capacity is being built in the state (Leone 2003b). There is also evidence that highly volatile spot market prices will do nothing to stimulate grid expansion. In 1996, New Zealand introduced full nodal pricing that produced a substantial increase in pricing volatility, but in 2002 the New Zealand Energy Market Rules Committee reported that transmission constraints had not been relieved by new construction. An interesting note on the incentive to expand transmission as well as the motivation of traders stems from the power blackout of August 14, 2003. *The New York Times* reported that the blackout created important profit opportunities for some of the nation's largest energy traders (e.g., Goldman Sachs), but while the blackout was perceived to be good for traders, it also created the specter of later government oversight or regulation (D. Barboza and L. Thomas, "Surges in Energy Prices Examined after Power Failure," *New York Times*, August 19, 2003, C-1). In retrospect, it appears evident that profits from congestion and the foreclosure of rivals will counter any trading signals to expand the network.

Energy traders and marketers have attempted to placate concerns by introducing voluntary rules on disclosure, agreeing to a code of conduct, and granting FERC selective access to pricing information. Given the strong motivation to exploit trading opportunities, it is difficult to place much confidence in this type of self monitoring. FERC has endeavored to impose selective restrictions on traders following the Enron abuses. These include revoking Enron's right to sell power at market-based rates, although it can still sell power at regulated rates. The California Attorney General described FERC's actions regarding Enron as "imposing a death penalty on a corpse" (R. Smith, "FERC Punishes Enron, 60 Others," *Wall Street Journal*, June 26, 2003, A-3). At present, the vol-

ume on the energy trading markets appears to have declined by 70–80 percent from earlier peak periods.

The third area of market failure involves the inability of deregulated markets to provide adequate protection for differentiated classes of customers. As noted earlier, high overhead/common costs and differentiated markets invite price discrimination and cross subsidization. Assuming that demand is inelastic in residential markets and more elastic in industrial markets, there will be an incentive to shift common costs to the residential sector. This will be aggravated with the application of Ramsey pricing. Price increases in the residential markets will raise revenues, while price reductions will reduce revenues. Hence there will be no incentive to experiment with lower residential prices; conversely, the reverse incentive will exist in highly elastic industrial markets. The question will then arise, how high should prices be increased in inelastic residential markets? The ceiling price prescribed by neoclassical economics is based on the stand alone cost of a single-purpose system serving that market. Acceptance of this upper limit effectively forecloses residential participation in joint production economies.

In electricity and natural gas supply, the relatively poor load characteristics of residential customers can be used as an excuse for assigning the full burden of fixed charges to these users through peak-period cost allocations. FERC already applies this approach to pipelines where the fixed charges are assigned by the straight fixed/variable formula to customers taking service at the peak. There is also evidence that the problem has worsened because large industrial customers seek to exercise oligopsony power to extract price concessions from generators or traders. This can take the form of supplier acquiescence to cherry picking that involves siphoning off low cost plant and ancillary services for this class of customer through proprietary bilateral contracts while the residential customer is left with high cost capacity.

At present, about 2–5 percent of residential customers have shifted from incumbent utilities to alternative suppliers in states that have aggressively promoted retail competition in electricity.¹² The experience in Texas and Pennsylvania deserves comment since it provides insights into the potential shortcomings of retail competition. Texas claims to be in the forefront of retail competition, and about 8 percent of the residential market has shifted to nonaffiliated suppliers. Approximately four to nine competitive suppliers supposedly serve this market; however, the viability of independent competitors has yet to be determined. Furthermore, there is evidence that a pattern of price leadership has evolved that could set a precedent for deregulated prices in Texas and other states. The incumbent utility establishes the “price to beat” and competitors will use this price as the point of reference for setting their rates. As a consequence, when incumbents raise their price, competitors raise their prices. This pattern of leadership was demonstrated when both Reliant Energy and TXU raised their prices. Pennsylvania pioneered in retail competition, but the percentage of residential customers switching to alternative suppliers, less than 10 percent, appears to be declining as competitive suppliers are reducing their offerings or leaving the state entirely. It is possible to blame this on factors such as stranded cost recovery charges that are assessed against all classes of users,

but a more in-depth examination of the structure of competitive supply is clearly required. If a competitive structure composed of independent suppliers capable of providing long-term reliable service is not sustainable, then the residential consumers will have only three options when retail price regulation is removed. These include (1) buying through traders or marketers on highly volatile spot markets, (2) negotiating bilateral contracts through aggregators,¹³ and (3) relying on default suppliers who will be able to shift all costs and risks forward to the consumer after regulators lose all authority to review passthroughs. None of these options provides adequate protection for residential consumers.

In telecommunications, local exchange prices have been relatively rigid, reflecting RBHC dominance, while pricing in the long distance market has been characterized by price leadership. The IXCs engaged in conscious parallelism in both the interLATA and intraLATA markets. In 2002 WorldCom raised its rates three times, and AT&T and Sprint followed closely thereafter.¹⁴ This occurred as household usage of long distance telecommunications continued to decline at an average annual rate of 3 percent. In 2003, however, the long distance market experienced a traumatic jolt when MCI (formerly WorldCom) was able to greatly reduce its long-term debt (from \$40 billion to \$4-6 billion) and write down the value of assets as part of the bankruptcy process. This provided a stimulus for MCI to cut prices to capture market share. As a result, MCI introduced new flat rate package offerings such as its "neighborhood plan" combining both long distance and local service. AT&T and the RBHCs did not have this latitude since they still had a significant debt burden. Accordingly, AT&T, SBC, and Verizon moved to attack MCI on several fronts. They charged that MCI should be denied bankruptcy because of its criminal behavior, and they charged fraud in laundering telephone traffic to avoid the payment of access charges. These efforts proved unsuccessful and AT&T et al. had no choice but to match MCI's flat rate packages. This pricing response was clearly attributed to MCI's bankruptcy, but the question remains whether the tight oligopolistic pricing practices of the past will return once the industry stabilizes itself. Free market proponents argue that the dynamics of telecommunications technology will foreclose such stability. They believe, for example, that wireless networks will challenge wireline networks and that voice over Internet protocol (VoIP) will challenge incumbent carriers. However, this simplistic argument totally ignores the resurgence of merger activity among major telecom players that could easily introduce greater concentration in the industry. RBHCs have demonstrated renewed interest in acquiring AT&T and its spun-off affiliate, AT&T Wireless. If successful, these deals would reestablish oligopolistic interdependence and conscious parallelism in pricing will again prevail.¹⁵

A new generic problem has emerged that will burden both energy and telecommunications consumers. There is a pervasive drive for firms beset by failed diversification and failed mergers to shift the associated costs and risks to basic service customers. The options for these firms are three-fold: (1) abandonment of unregulated ventures, (2) the

sale of assets, often at a loss, and (3) shifting the costs of failure to utility consumers via borrowing against the credit of the utility, taking cash from the utility, shifting costs to the utility, sale of assets to the utility at inflated prices, and denigration of utility service and investment.

There are numerous illustrations of these shifting practices. The following are only a selected sampling. El Paso sold debt on behalf of its Southern Natural and ANR Pipelines when the sale of assets did not cover the company's cash deficits (N. Bullock and A. Dowell, "El Paso Taps Pipelines for Liquidity," *Wall Street Journal*, February 28, 2003, C-10). Cincinnati Bell was asked to carry a significant portion of the \$802 million in debt for the parent holding company, Broad Wing, due in 2005. (S. Young, "Telecom-Sector Debt May Claim More Victims," *Wall Street Journal*, April 21, 2003, C-1). Westar Energy proposed shifting \$1.9 billion of debt to the utility side of the business through intra-company loans. The Kansas Commission denied this request (R. Smith, "Beleaguered Energy Firms Try to Share Pain with Utility Units," *Wall Street Journal*, December 26, 2002, A-1). CMS Energy had a net loss of \$620 million in 2002, but its utility revenues from Consumers Power were strong. On May 1, 2003, Consumers Power issued \$620 million in first mortgage bonds to pay down debt and serve "general corporate purposes." Similarly, Aquila proposed to use its regulatory assets as collateral for \$650 million in revolving loans.

Enron provides an example of taking cash directly out of the utility. It took \$27 million out of Portland General in 1997, but this amount was probably lost because of bankruptcy. Pinnacle West wanted to borrow \$500 million from its utility affiliate, Arizona Public Service, or get the utility to back such a loan. The Arizona Commission approved only \$125 million (R. Smith, "Beleaguered Energy Firms Try to Share Pain with Utility Units," *Wall Street Journal*, December 26, 2002, A-1).

There are many examples of the direct shifting of costs to the utility. Duke Energy shifted \$124 million from its trading unit to the books of the utility. This transfer had the additional advantage of reducing the utility's excessive earnings that might otherwise have prompted a rate reduction. The South Carolina Commission admitted that Duke had not had a rate case in ten years (R. Smith, "Beleaguered Energy Firms Try to Share Pain with Utility Units," *Wall Street Journal*, December 26, 2002, A-1). Another example of the shifting of costs to the utility is provided by WorldCom when it transferred \$3 billion in expenses to MCI's books in 2001 (D. Solomon, "WorldCom Moved Some Costs to MCI," *Wall Street Journal*, March 31, 2003, A-3).

An example of the sale of assets to the utility at inflated prices occurred when Cinergy got approval to transfer two unregulated power plants to Public Service of Indiana at a price greater than the book value of the assets (R. Smith, "Beleaguered Energy Firms Try to Share Pain with Utility Units," *Wall Street Journal*, December 26, 2002, A-1).

For consumers of electricity, this risk/cost shifting has the potential for making consumers pay twice. First, the consumer pays for the amortization of so-called stranded

costs through the securitization process. This gives the utility an up-front cash payment with which to diversify while the consumer pays a securitization charge over time to cover interest and principal on the debt which funded the payment. If the parent holding company is then bailed out of its diversification failures by shifting these costs to the utility basic service customers, the consumer is, in effect, paying twice. In the absence of strong regulatory intervention the prospect of stopping this abuse is nonexistent.

The fourth area of market failure involves the inability of deregulated markets to come to grips with societal values and externalities. Social values focus primarily on the need to assure available service to all classes of customers and all geographic regions. For energy utilities, this has required direct subsidization and customer assistance programs. As a point of reference, it is generally accepted that when energy bills exceed 8–10 percent of the household budget, the result can be major hardship and a serious reduction in the household's standard of living. For telecommunications, attention focuses on universal service. Average telephone penetration for all classes of income increased from 91.8 percent in 1984 to 94.5 percent in 2001. But this disregards the general problem of serving the poor, especially low income senior citizens, and the digital divide that forecloses many low income people from access to the Internet (Loube 2003). Regrettably, subsidization programs in energy and telecommunications can implicitly serve to camouflage the impact of pricing practices that discriminate against residential consumers.

The problem of controlling pollution emissions as a social cost becomes imperative since fossil fuel power plants account for 40 percent of all of the emissions under the Clean Air Act. The cap trade model has become the free market weapon for addressing this problem. Essentially, it involves placing ceilings on permissible levels of pollution, together with the trading of emissions credits between those who are below or above these ceilings. A major problem arises when hot spots produce critical health hazards and a polluter is able to avoid installing pollution control equipment by simply purchasing emissions credits. Eric Schaeffer has shown that residents of sixteen states face an increased health hazard from sulfur dioxide emissions despite a decline in such emissions on a nationwide basis between 1990 and 2001 (Schaeffer 2002). He believes these emissions are traceable to forty-one coal-fired power plants that are able to avoid the problem by buying emissions credits. Targeting specific hot spots through ex post state intervention to impose specific mandatory pollution controls would destroy the viability of the model. Similarly, rapidly reducing the ceilings would greatly reduce the value of the credits. A preferred approach would require the pooling of pollution controls on an interfirm basis and the introduction of environmental dispatch rather than the market dispatch of power—but that would involve regulatory intervention.

Flawed Regulatory Policies

At present the FCC faces two conflicting courses of action. The first is to treat the local exchange and broadband capacity as monopoly focal points that must be forced open to permit competitive entry and the diminution of RBHC market power. This is evident in the Triennial Review Order (FCC 2003), which reaffirms the Commission's commitment to maintain leasing and collocation requirements in the hope of encouraging CLEC entry. The second course involves placing primary reliance on new technology to displace incumbents with new supply options along the lines of the serial monopoly argument. This is evident in the Commission's permissive merger policy and its reluctance to enforce traditional economic regulation. Neither approach directly deals with dominance in the wireline market or the problems of tight oligopoly. Nor do these options address the questions of stimulating pure research, controlling service denigration, or the shifting of risk and cost between customer classes.

FERC has put in place a power market program (PMP) to achieve competition in wholesale electricity markets (FERC 2003), but PMP has serious flaws. PMP mandates that utilities must join an RTO, but then it relies on the functional separation of transmission to assure nondiscriminatory access to the grid and sufficient capacity. The incumbent utilities can still retain ownership of the grid even though they relinquish actual operation to the RTO. Furthermore, PMP imposes no standards for expanding the network other than a regulatory willingness to allow a higher rate of return for new transmission investment. In effect, the same incentives and problems previously noted essentially remain in place. Furthermore, it is easy to envision the ability of strong asset-based utilities, previously described, to negate any potentially punitive RTO actions. In effect, the major centers of market power would seem to be still in place—the only difference is that traditional regulatory control of revenue requirements has been severely weakened.

At the state level, the FCC has preempted much of the state authority over the RBHCs through its open access policy and its retention of price cap regulation (PCR). In electricity, state enthusiasm for restructuring and deregulation appears to have declined significantly in the wake of the California debacle. But as yet no consistent new regulatory policy has emerged. Where retail competition has been promoted, states rely on ceiling prices or price cap regulation (sometimes called standard offers) as a transitional safeguard until effective competition emerges. However, it is beginning to appear that PCR may well become a permanent feature of electricity supply. In a number of states, when price caps expire, a significant rate increase is permitted to correct for changes in wholesale rates, and then a new price cap is imposed for a new time period.

PCR has a number of major deficiencies. First, a ceiling price does virtually nothing to limit price discrimination or cross subsidization when these strategies take place below the ceiling price. Second, PCR is not an effective "firewall" to control cost and risk shifting between customer classes. What is needed is the full restoration of revenue requirement regulation and cost of service studies. Third, PCR can cause major prob-

lems when the retail price ceiling is greater than the wholesale price. This will yield substantial market profits to the utility. Conversely, if the retail price ceiling is less than the wholesale price, the utility becomes vulnerable to bankruptcy. Fourth, proponents of competition argue that price caps will discourage competitive entry. In effect, price must rise to achieve competition; earlier it was claimed that competition would reduce price. But how high should prices be permitted to rise to encourage entry—especially if the existing price ceiling is sufficient to attract resources and assure adequate service? When consumers do not shift to an alternative supplier, Ken Malloy, a strong proponent of competition, argues that “there needs to be mechanisms to pry people away. . . . I am comfortable with pushing residential customers out” (Energy Issues Newsletter, *Issue Alert*, “Pennsylvania Ruling Ignites Debate over Deregulation,” May 21, 2003). Three attempts have been made to force consumers to migrate from the incumbent utilities to a non-utility supplier. Georgia’s forced migration culminated in many complaints about extremely poor service from alternative suppliers. Pennsylvania’s “Market Share Threshold Plan,” introduced in 2003, also endeavors to create a competitive market by forcing the migration of utility customers. But the problem is that there are no independent alternative suppliers available in the state. Maine has adopted a program to create markets by requiring customers to choose between supposedly competitive markets for direct power purchases or for default service that will be priced on the basis of bidding or auctioning. Competitive markets would then determine the price of electricity. This makes the heroic assumptions that a viable competitive wholesale market exists within the reach of available grid connections and that the delivered price will be lower than that associated with vertical integration.

There are two important experiments associated with state regulation that deserve special attention. These are the Rochester Plan introduced in New York in 1995 and the Wisconsin Advanced Plan which was developed and refined by the Wisconsin Commission over the period 1975–1999. The Rochester Plan kept the basic telephone network under regulation while giving the parent holding company, Frontier, the option to provide a host of deregulated telecom services. Rochester’s basic service was so efficient that the carrier retained more than 96 percent of the local market. If there is a denigration in the quality of local service, the New York Commission has the authority to curtail dividend payments to Frontier. The Wisconsin Advanced Plan worked very well to coordinate demand forecasts and the construction of new generation capacity throughout the state. The plan also involved transforming the grid into a statewide common carrier. Unfortunately, the plan was abandoned when the utilities became apprehensive about constructing new generation as a result of the Energy Policy Act of 1992.

Agenda for Reform

Despite the major financial collapses and growing evidence of market failure, the critics of regulation steadfastly maintain their commitment to the goal of free markets

and their resistance to economic regulation. This is best illustrated by the two Berkeley Manifestos of January 26, 2001, and January 30, 2003. As the 2003 Manifesto stated, "We believe that California will compound policy errors if it swings back to comprehensive governmental command and control of the electricity industry. . . . We believe that the development of competitive markets should still be vigorously pursued." This position undoubtedly reflects much of the thinking of neoclassical economists.

In contrast, this paper will introduce a proposal for strengthening regulation that integrates direct regulatory intervention, structural reform, and reliance on market forces where feasible.

Public utilities must be considered not only as an integral part of the nation's infrastructure but also as a system supplying a collection of services and activities that can be envisioned as a commons. There are features of this commons that serve to define its economic content and boundaries. The first is the provision of services that are essential in modern society; the second is the provision of these services on a collective basis in order to introduce substantial economies that will lower real costs across the industry. This definition of a commons stands in sharp contrast to the classic definition of a commons as a communal resource that is vulnerable to overuse, private exploitation, and eventual exhaustion. As applied here, full use of the commons will actually improve the overall performance of resources committed to this activity. A primary test for the existence of economies embodied in the commons is the ability of increased usage to reduce the real average and incremental cost for each service. If the cost for each service is less than its stand-alone cost, then pervasive network and coordination economies exist and the service or activity should be a legitimate part of the commons/network. Where no such economies exist, the stand-alone cost of a service would be equal to or less than the cost of providing the same service over the network and there would be no cost advantage for incorporating the service as an integral part of the commons/network complex. Economies of joint production would be significant in determining cost savings for specific services. It should also be noted that the concept of a commons applies to multiple services or activities sharing significant overhead or common costs on an industry or interindustry basis. As such it is much broader than the traditional definition of natural monopoly. It is, of course, imperative that everyone should have full, nondiscriminatory access to the commons/network.

There must be full structural independence for the consolidated network function. This requires independence in all matters of management, planning, pricing, and financing of the network as defined. Total independence should create both a strong incentive for network management to promote increased usage of the system as well as a lower cost of capital since the network would be exposed to less uncertainty than more highly speculative activities. The Commodities Clause of the Hepburn Act of 1906 provides a precedent for separating the network from the ownership and control of the product handled by the network. Where full independence is not politically feasible, a variant of the Rochester Plan would appear to be a workable option. This would require a separate organization of the network and its own debt financing. Any attempt to deni-

grate service, engage in cross shifting of expenses, or introduce price discrimination would permit the regulator to immediately foreclose dividend payments to the parent holding company.

The network complex would remain under full regulation with its prices cost-based rather than market-based. The network would have common carrier status, and it would provide basic service, advanced services, and facilities and services for resale. A major question emerges regarding the degree to which the network should be permitted to vertically integrate. This should be a function of the degree to which vertical integration culminates in lower average costs to the final consumer relative to the prices that would be associated with competitive bidding and any associated transaction costs. By offering a full range of services, the consumer would be able to choose between regulated services, competitive suppliers, and new entrants creating new options not provided by the network such as green power, renewables, or a host of interrelated options that utilize network facilities. An example of the latter exists in Canada, where there are 940 resale-based Internet service providers and 13,000 separately administered networks which incorporate the underlying carrier-based system. This total array of activities should be considered as a part of the telecommunications commons, where consumers could enjoy increasing returns as well as a wide range of options to meet their needs. To assure this goal, regulation will be imperative to control any abuses associated with market power.

Regulation must promote both industry-specific planning and a broadened information base to expose abusive gaming strategies, oligopoly behavior, and fraudulent practices. This will include developing and maintaining the number of indices designed to measure (1) the availability and adequacy of service—both on a network and industry-wide basis, (2) potential conditions that may be conducive to scarcity and the exercise of power, (3) evidence of oligopoly behavior, (4) assessments of the adequacy of innovation and technological advance, including the introduction of renewable energy sources and demand-side management designed to minimize social costs, and (5) an evaluation of the availability of service to all classes of consumers and the need to introduce a public program of cross subsidization to assure such availability. Regulation of the network will be invaluable in the construction and maintenance of these indices and general monitoring of industry performance. It should be recalled that the California grid was first able to detect evidence of fraudulent behavior long before FERC. The Wisconsin Advanced Plan could serve as a model for state and federal infrastructure planning. Such planning and performance evaluation must be applied to both activities on the commons and the underlying network complex. Structural separation alone will not be sufficient to achieve this goal. Great Britain provides an outstanding example where British Railtrack was given responsibility for operating the rail network while responsibility for operating passenger and freight trains was given to twenty-five newly formed companies. Railtrack finally declared bankruptcy in 2001, and the government was forced to assume responsibility for all new rail infrastructure investment. Structural separation alone does not guarantee adequate performance.

For all of the deregulated marketers, traders, rebundlers, and aggregators who will make use of the commons, there must be full transparency and full disclosure on all matters pertaining to price and corporate affiliation. Furthermore, these entities must be required to post a bond capable of covering any penalties that might arise due to poor service or compensate consumers for any costs incurred through the abandonment of service. It can be argued that this requirement will constitute a major barrier to entry, but the failure to employ this safeguard will simply shift all risk and uncertainty to the final consumer.

Finally, regulation must be given sufficient flexibility to respond to specific problems on a case-by-case basis. Regulatory intervention may be necessary whether the public utility activity is regulated or not. This could involve cases where tight oligopoly persists in a portion of the regulated network but also overlaps into cross-industry functions. Under such circumstances there will be a need to expand reporting requirements to include price and earnings information by line of service. This could lead to new forms of remedial action.

Hopefully, these recommendations continue in the institutionalist tradition. They pose an intriguing conclusion: If satisfactorily applied, reformed regulation should achieve the goals of greater efficiency, greater choice, and lower price that were initially imputed to the free market—but which that market was not able to achieve because of repeated evidence of market failure.

Notes

1. For a summary of the institutionalist contribution to economic regulation, see H. M. Trebing, "Public Utility Regulation, Institutional Contribution to," pp. 200–209, in *The Elgar Companion to Institutional and Evolutionary Economics*, L. Z. G. M. Hodgson, W. J. Samuels, and M. R. Tool, eds. (1994). Note especially M. G. Glaeser, E. W. Clemens, and J. C. Bonbright. In the same collection see E. S. Miller, "Regulation, Theory of Economic," at pp. 225–233.
2. The academic critics of regulation constitute a diverse group of individuals and schools of thought extending from Herbert Spencer and Arthur T. Hadley in the nineteenth century to the Chicago School, public choice advocates, libertarians, and a number of neoclassical economists. A new consensus appears to be emerging within this group that assumes the superiority of free markets over government regulation is so patently obvious that scholarly attention should focus on evidence of emerging markets or the promotion of market solutions to problems inherent in network industries. The World Bank has also joined the ranks of the critics of regulation, claiming that nations with the least business regulation foster the strongest economies (M. Sholder and T. Roth, "World Bank Faults Tight Regulation," *Wall Street Journal*, October 7, 2003, A-2).
3. Montana Power's subsequent history typified much of the aftermath of deregulation. Goldman Sachs promoted the conversion of Montana Power into Touch America. Power generation was sold to Pennsylvania Power and Light, while the transmission and distribution system was sold to Northwestern. Northwestern's diversification losses skyrocketed and bankruptcy followed. Touch America collapsed and its per share price fell from \$30 to 30 cents. Montana consumers continue to suffer because of deteriorating service and the high cost associated with reconstituting a viable utility system.

4. Arthur Andersen had served as both the auditor and consultant for Enron, WorldCom, Global Crossing, Qwest, and others. On July 15, 2002, Arthur Andersen was found guilty of duplicity in camouflaging the extent of failures in these firms. See "Foreman was Last to be Persuaded" by C. Bryan-Lowe, *Wall Street Journal*, June 7, 2002.
5. Initially the cable carriers appeared to get a better start than the RBHCs, but the gap appears to be closing. For an early appraisal, see S. Young and P. Grant, "How Phone Firms Lost to Cable in Consumer Broadband Battle," *Wall Street Journal*, March 13, 2003, A-1.
6. Merger data compiled by Diane Moody, Director of Statistical Analysis, American Public Power Association, Washington, D.C.
7. There is already evidence of a decline in new construction that will impact future reserve margins. Planned additions as a percent of generation plant under construction were 96 percent in 2002. This is forecast to drop to 0.5 percent in 2005, zero in 2006, and zero in 2007 (Platts NEWGen 2002). When planned additions are significantly less than plant under construction for an extended period of time, there will be a decline in available generation. Since the growth in demand (load growth) is fairly constant, the stage is set for major problems in maintaining adequate reserve margins.
8. Argument of the muni-coop coalition against PJM is set forth in *Response of the Coalition of Municipal and Cooperative Users of New PJM Companies' Transmission to PJM Answer*, PJM Interconnection, FERC Docket No. RT01-2-006 and Docket No. RT01-2-007, May 20, 2003.
9. See "El Paso Reaches Pact to Settle California Case" by A. Barrionuevo and R. Smith, *Wall Street Journal*, March 21, 2003, B-3. On September 23, 2002, FERC's Chief Administrative Law Judge found that El Paso did not schedule all available capacity nor did it post all available capacity, and this constituted a clear withholding of pipeline capacity of sales to the California market in 2000-2001 and an exercise of market power. Federal Energy Regulatory Commission, *Public Utilities Commission of the State of California v. El Paso Natural Gas Co. et al.* Docket No. RP00-241-006, Initial Decision issued September 23, 2002. See pp. 9, 20, 23.
10. Williams paid a \$20 million fine to the U.S. government as part of a settlement when its Transcontinental pipeline gave preferential treatment to its energy-trading affiliate. The violations occurred between 1999 and 2003. FERC said the civil penalty was the largest levied in the agency's history. See "Williams Cos. To Pay Penalty of \$20 Million" by A. Barrionuevo, *Wall Street Journal*, March 18, 2003, B-7.
11. Sierra Pacific Resources is the parent holding company of Nevada Power Co. Sierra and the states of Nevada and California allege that El Paso and Sempra Energy engaged in an illegal market allocation by agreeing to work against an expansion of a pipeline from Wyoming that would allow new entrants into the market. At the same time, they agreed not to compete with each other in the region. See "Sierra Pacific Claims Pipelines Created Artificially High Prices" by R. Gold, *Wall Street Journal*, April 22, 2003, A-23.
12. An excellent overview of the current status of retail competition in electricity is provided by Kenneth Rose's review conducted for the Virginia State Corporate Commission (2003).
13. Buyer aggregation was assumed to be a viable option for protecting residential/small business consumers by introducing countervailing power. It suffers because of the poor load characteristics of this class of consumers and the inherent flaw of combining all classes of users with one aggregator. This simply shifts opportunities for discrimination to a new entity. It works well for smaller communities composed primarily of residential users, but then municipal ownership of the utility is the preferred choice.
14. For two reviews of these lock-step price increases, see "For Users of MCI, New Year to Bring Another Rate Rise" by Y. J. Dreazen, *Wall Street Journal*, December 4, 2002, and "AT&T Will Raise Long-Distance Call Rates, Fees" by S. Young, *Wall Street Journal*, December 30, 2002, B-4.
15. Potential network economies and the impact of new technology have rekindled merger activity in telecommunications. A merger between AT&T and an RBHC would create a dominant position in the global business telecom market which an RBHC would find difficult to estab-

lish on its own. At the same time, AT&T will face increasing pressure from a restructured MCI, and this will make vertical integration with an RBHC particularly attractive. Merger talks between BellSouth and AT&T have been on and off, but the successful completion of a merger between AT&T and an RBHC, such as BellSouth, would certainly cause Verizon to look at MCI. ("BellSouth-AT&T Talks Face Hurdles," by S. Young and A. Latour, *Wall Street Journal*, October 27, 2003, A-3.)

The *Wall Street Journal* reports growing interest in the acquisition of AT&T Wireless by RBHCs and foreign carriers, concluding that this indicates that "the long-awaited consolidation of the U.S. wireless industry is about to begin." Cingular Wireless (a joint venture of RBHCs BellSouth and SBC) is in discussions to acquire AT&T wireless, thereby creating the largest wireless company in the U.S. This would overtake Verizon and Vodafone's Verizon Wireless, which is currently the largest U.S. wireless carrier. ("AT&T Wireless Draws More Suitors," by J. Drucker, A. Latour, and R. Sidell, *Wall Street Journal*, January 15, 2004, A-3.)

The growing interest in voice over the Internet protocol involves using a VoIP phone or a wireline phone that is connected to a VoIP adapter which, in turn, is connected to a DSL or cable modem. Conversations are broken into small packets and sent over the Internet. While this could create a potential confrontation between RBHCs and cable companies, the long-term advantage would appear to rest with the RBHCs because of their superior capital resources and their ready access to an established customer base. Qwest (an RBHC) has already moved aggressively to take the initiative in VoIP.

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